NATIONAL ACADEMY OF SCIENCES

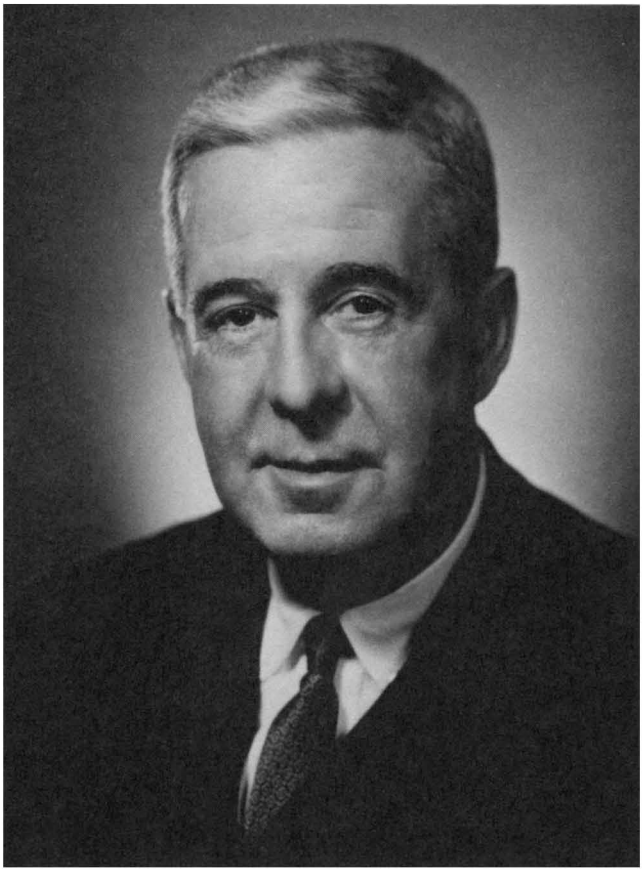
WALSH MCDERMOTT

1909—1981

A Biographical Memoir by

PAUL B. BEESON

Biographical Memoir



Walsh McDermott

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October 24, 1909–October 17, 1981

BY PAUL B. BEESON

WALSH MCDERMOTT'S professional life divides into two phases. Until his mid-forties he followed a highly productive career in academic clinical medicine and laboratory investigation. He then decided to shift emphasis and work in the field of public health at the local, national, and international levels. From this vantage point he played an influential role in the development of national health policy and the reorganization of U.S. medical research, earning recognition as a leading statesman in American medicine.

EDUCATION AND EARLY LIFE

McDermott was born on October 24, 1909, in New Haven, Connecticut, where his father was a family doctor. His mother, the former Rosella Walsh, came from Massachusetts. After attending New Haven public schools and Andover, he went to Princeton for premedical studies, receiving the B.A. degree in 1930. He then entered Columbia University's College of Physicians and Surgeons, earning the M.D. degree in 1934. In college and medical school he had little financial support and had to obtain scholarships as well as part-time jobs. For residency he moved across Manhattan Island to the New York Hospital. Thus began a long association with that hospital and with the Cornell University College of Medicine.

After his death, Cornell created an endowed chair of medicine in his name in recognition of this association.

During the second year of residency training, in August, 1935, Walsh McDermott was diagnosed as having tuberculosis. He was transferred to the Trudeau Sanitarium, Saranac Lake. Over the next nineteen years he would be admitted to the New York Hospital nine times for treatment of the disease.

At Saranac, he seemed to make good progress and after seven months returned to take a part-time appointment in an outpatient clinic of the New York Hospital devoted to the treatment of syphilis, though—priding themselves on the practice of general internal medicine—the clinic physicians seldom referred patients elsewhere for the treatment of nonsyphilitic problems. At that time penicillin had not been introduced into clinical practice, and the mainstay of antisyphilitic treatment was injection of arsenical compounds at weekly intervals over periods of months or years.

In the New York Hospital syphilis clinic, McDermott demonstrated his capabilities as physician, teacher, and humane care-giver. It is also reasonable to assume that his own protracted illness and the long-term care for patients with syphilis influenced the nature of his work during both phases of his medical career. First, it brought home the fact that the etiologic agent of a disease can remain in the body for long periods without causing discernible evidence of disease. Second, it underscored the importance of the samaritan role of the physician and the need to treat the whole person rather than focusing on a single process or etiologic agent.

Another dividend of incalculable importance came out of his work in the syphilis clinic, for it was there that he met Marian MacPhail—of the MacPhail baseball dynasty—who was serving as a volunteer clinic worker. They married in 1940 and their home was always in Manhattan, though they

used a vacation house in Pawling, New York, on weekends and summer holidays.

Marian's support during McDermott's illnesses and her influence on his style of living were of greatest significance to the successful pursuit of his professional life. In 1941, Marian joined the staff of *Time* Magazine as a researcher and in 1947 transferred to *Life* Magazine, where she eventually became senior research editor and a member of the Board of Editors. Both McDermotts thus enjoyed productive individual careers, and their friends included not only colleagues from the field of medicine, but also writers, political figures, photographers, and sports executives.

THE McDERMOTT LABORATORY

Penicillin

In 1942 David Barr, chief of medicine at the Cornell–New York Hospital, appointed McDermott head of the Division of Infectious Diseases. By that time penicillin was being made available for the treatment of certain diseases. McDermott was chosen as one of the clinicians responsible for using the limited supplies of the drug in trials against certain defined clinical infections. It was soon discovered that penicillin was far more effective than the arsenicals in treatment of syphilis and the management of that disease was so simplified that the special out-patient clinic could be closed. McDermott's scene of operations then moved to the infectious disease floor of the hospital, and his investigations broadened to include many other infections produced by staphylococci, pneumococci, the typhoid bacillus, and brucella. In the next few years, several other effective antimicrobial drugs became available: streptomycin, the tetracyclines, and chloramphenicol. McDermott's infectious disease service at New York Hospital became an exciting training area where members of the

resident staff as well as research fellows were eager to be assigned.

McDermott studied the pharmacological behavior of the new antimicrobial agents in a variety of clinical situations. He showed, for example, that in some circumstances penicillin could exert its beneficial effect when given orally, though it was originally thought that the drug had to be administered by injection to avoid the destructive effect of gastric acid. Travelling to Mexico, he also collaborated with health authorities in Guadalajara in devising therapy for such diseases as typhoid fever and brucellosis, comparing the relative effectiveness of the tetracyclines, streptomycin, and chloramphenicol.

Yet flareups of his own tuberculosis kept intervening during these years, necessitating periods of bed rest either in the hospital or at home. McDermott was treated with several new drugs thought to be active against the tubercle bacillus, but the disease continued to manifest itself from time to time with pulmonary spread, cervical adenitis, and uveitis. Despite periods of incapacity, he continued to direct the work of the Infectious Disease Ward and—through his team of colleagues—of his research laboratories. Even when forced to give advice and directions from his bed, his voracious reading of the medical literature and remarkable memory enabled him to retain the respect and leadership of his team.

McDermott's most serious episode of tuberculosis occurred in 1950 when he developed a bronchopleural fistula. After a series of consultations and at his own urging, an attempt was made to close the fistula surgically. This was accomplished by a high-risk lobectomy and thoracoplasty, fortunately with supplementary treatment by the newly introduced drug isoniazid. After that, the disease began to abate, although there was some radiologic evidence of active progression in the left lung, for which he received further chemotherapy.

Antimicrobial Therapy for Infections in Animals

Along with an extensive program of clinical investigations into the treatment of several infectious diseases, McDermott and his team of associates undertook laboratory investigations involving antimicrobial therapy of infections in animals. His able young associates included Paul Bunn, Ralph Tompsett, David Rogers, Vernon Knight, Robert McCune, Floyd Feldman, Charles LeMaistre, Edwin Kilbourne, Roger DesPrez, Harold Lambert, and John Batten.

Their special focus of attention was the interaction of microbes and drugs in living tissues, with particular emphasis on the phenomenon of microbial persistence. In such cases a microbe susceptible to a drug *in vitro* can, nevertheless, survive long-term exposure to that drug in the living animal host. For nearly two decades McDermott explored this phenomenon—which he had observed clinically in syphilis, tuberculosis, typhoid fever, typhus fever, brucellosis, and more rarely in staphylococcal infections. In certain circumstances a latent microbe can again acquire the ability to reproduce and cause disease within the host.

McDermott and his team studied mice inoculated with human tubercle bacilli most intensively and subsequently determined the number of living organisms recoverable from these animals' spleens. The experiments were time-consuming and tedious, requiring months for completion.

Mice that received no therapy were found to have fairly constant numbers of organisms in their spleens during succeeding months. Certain drugs caused a rapid decline in the number of organisms during the first three weeks but no further reduction in the number of culturable units when therapy was continued for as long as seventeen weeks. The bacteria recovered from treated animals showed the same susceptibility to the antimicrobial drugs as at the beginning of the experiment, i.e., microbial persistence.

When the researchers used the potent drugs isoniazid and pyrazinamide, what appeared to be complete sterilization came about within twelve weeks: no living organisms could be demonstrated by culture of spleens. Yet after a rest period of three months, viable organisms were once again found in about one-third of the animals. Treatment with cortisone seemed to favor the infecting agent, so that viable organisms could be demonstrated earlier and in a higher population of treated mice.

After investigating this phenomenon for many years, McDermott concluded that antimicrobial therapy induced a kind of temporary "adaptive plasticity" in a certain proportion of the infecting inoculum, or change that could undergo spontaneous reversal. This long quest is recounted in his 1959 Dyer Lecture and his 1967 Harvey Lecture (1959,1). On the basis of many lines of reasoning, McDermott and his colleagues concluded that the phenomenon of microbial persistence could not be explained on the basis of survival in certain "sanctuaries," e.g., within cells. They also showed that microorganisms were not protected from the effect of drugs by the chemical milieu of an inflammatory reaction.

More Penicillin and the Role of Drugs in Combination

McDermott's laboratory tested the bactericidal effect of penicillin against the staphylococcus, and a series of imaginative experiments produced evidence that here, too, pointed to an effect on the microbe. McDermott suggested that microorganisms became "indifferent" to the drug by some change in form (possibly analogous to protoplasts), a transformation he often described as "adaptive plasticity."

McDermott also investigated the mechanisms of action of drug combinations. Clinical and experimental evidence showed that two different antimicrobial drugs can sometimes sterilize a bacterial population, either *in vitro* or *in vivo*, more

effectively than either one alone. The McDermott team came to conclusions not in accord with conventional thinking—that each drug kills those bacterial cells susceptible to it. Their findings favored an enhanced antimicrobial effect greater than a simple additive action in which each drug exerts its effect by its own mechanism.

It is interesting to note that McDermott never had any formal research training in college, medical school, or in his postgraduate years. He was able, nevertheless, to organize a microbiology and experimental pathology research laboratory and to attract talented younger people to work with him. He taught himself much by extensive reading and in conversations with his colleagues. In this connection he was particularly fortunate to form a lasting friendship with René Dubos of The Rockefeller Institute (later University). They were frequently in touch and were both superb communicators. Some of McDermott's scientific success is surely attributable to the close association he maintained with Dubos and other Rockefeller scientists.

EDITORIAL WORK

McDermott became managing editor of the *American Review of Tuberculosis* in 1948 and editor in 1952, when Esmond Long retired. He held the position for twenty years. During that time tuberculosis diminished as a cause of morbidity and mortality, the interest of pulmonary physicians shifted to other diseases and problems, and the name of the journal was changed to the *American Review of Respiratory Disease.* McDermott managed the transition smoothly and, under his editorship, the journal's importance in the biomedical world grew. He was known to be a conscientious editor who often revised the manuscripts submitted to him extensively.

He also played a leading role in the custodianship of the *Cecil Textbook of Medicine* (first edition, 1928). In the early

1950s, editors Russell Cecil and Robert Loeb invited McDermott to become associate editor with special responsibility for the infectious diseases section of the textbook. Cecil and Loeb retired after the 10th edition in 1959 and were succeeded by McDermott and this author as coeditors. We collaborated in that work through the next five editions of the textbook, until 1979.

For me this joint effort was both enjoyable and instructive. Our function was mainly to add new subjects to the contents, to select contributors (more than 200 in each edition), and to ensure that manuscripts were ready by the deadline. We were in touch constantly—by meetings, by telephone, and by letters. Because this relationship exposed me to McDermott's broad concepts of man, disease, and society, I came to enjoy it more and more. I was, therefore, especially interested to read something he said about this textbook work in 1973, when being interviewed as "Medicine's Man of the Year." The greatest compensation for such work, said McDermott, was "knowing that the volume goes to the remotest parts of the world—that someplace, perhaps in an African jungle, some human being is getting correct treatment because a doctor or a nurse has our book." This statement illustrates his sincere concern for the delivery of medical care in underserved segments of the population, at home and abroad.

CHANGE IN FOCUS: PUBLIC HEALTH

The necessity to carry out some field trials of antimicrobial therapy, plus an interest in the social and political problems in his own metropolitan area, caused McDermott to change the character of his medical work. In the course of his long-term studies on streptomycin therapy he had observed clinical relapses caused by the emergence of resistant microbes during a long course of therapy. When isoniazid became available there was reason to hope that more effective

treatment was at hand. But the matter of testing a new agent in a life-threatening disease presented a grave ethical dilemma. Was it justifiable to try a new agent, isoniazid, while withholding streptomycin—an agent which indubitably had some therapeutic value?

His concern about this ethical problem was resolved when one of his fellows, serving at the Communicable Disease Center, learned that Navajo Indians with serious and uniformly fatal forms of tuberculosis—i.e., meningitis and military tuberculosis—were dying on their reservations in Arizona and New Mexico because conditions did not permit the required daily injections of streptomycin over long periods of time. It was, therefore, justifiable to test isoniazid alone.

McDermott then arranged a program, the Many Farms Project, to use isoniazid therapy in that population. Physicians and nurses manned aid stations and a mobile visiting service reached wide territorial areas. McDermott made many visits there, negotiated with tribal leaders, and secured agreements for the drug trials to be carried out. The Many Farms Project provided unequivocal evidence of the superiority of isoniazid, which has largely supplanted streptomycin, although other antituberculous drugs of unquestioned value later became available.

The success of isoniazid in curing an otherwise lethal infection among the Navajo suggested the possible benefit of bringing other sophisticated medical service to that underserved population, and the Many Farms Project was expanded to include many other forms of modern medical care. The experiment continued for six years, and some parts of the program were continued beyond that time with benefit to the Navajo population. But—as McDermott and his colleague Kurt Deuschle reported in 1972—even the best medical care could not bring about a general improvement in the health of people who had inadequate food, insufficient

drinking water, lived in extreme poverty, and lacked modern sanitary services.

By 1955 McDermott decided that he could make his most important contribution to medicine in the area of public health. Maintaining his appointment in the Department of Medicine at Cornell, he became professor of Public Health and chairman of that Department, a position he held until 1972. During that period, he and his Department focused much attention on the public health problems to be found in a modern city: air pollution, poverty, malnutrition, drug addiction, alcoholism, tobacco usage, etc. A pilot project was set up with Kenneth Johnson in the Bedford-Stuyvesant area of Brooklyn, including day clinics, visiting nurses, and social work services. McDermott used this project in his teaching of public health and arranged for dozens of Cornell medical students to observe and participate.

In addition to the work at home, he served on committees dealing with international health problems and traveled widely in Central America, South America, Europe, and Asia. He spoke of this kind of work as "statistical compassion," i.e., a kind of activity that allows members of the medical profession to help people they never get to see.

WORK IN THE JOHNSON FOUNDATION

The early 1970s saw the creation of The Robert Wood Johnson Foundation, headquartered in Princeton, New Jersey. The income from a very large endowment was to be used in support of projects testing ways to provide better access to medical care. The creation of this Foundation provided an ideal opportunity for McDermott to work in health care delivery, a field for which he was so superbly prepared.

David Rogers, the first president of the Johnson Foundation, who had some years earlier collaborated on research

with McDermott at Cornell, persuaded his old colleague to accept a unique appointment as special advisor and to commute to Princeton. McDermott's academic title at Cornell was appropriately changed to professor of public affairs in medicine.

McDermott was especially interested in ways to provide better care for the most vulnerable members of the population—the elderly and the newborn. This involved setting up visiting nurse services, social services, welfare programs, prenatal care, and perinatal care. McDermott's interests and experience made him ideally suited for the task. He wrote position papers, took an active part in staff discussions, counseled other staff members, and made site visits—continuing actively in this work until his sudden death in 1981. After his death, Rogers wrote several moving tributes to this friend and colleague, detailing how very great his contribution to the work of the Foundation had been.

PROFESSIONAL MEMBERSHIPS AND OTHER ACTIVITIES

McDermott was elected to many learned societies, including the American Academy of Arts and Sciences, American College of Physicians, American Public Health Association, American Society for Clinical Investigation, American Thoracic Society, Association of American Physicians, Infectious Diseases Society of America, the National Academy of Sciences, and Britain's Royal College of Physicians. Of nonmedical associations, he belonged to the Century Association and the Council on Foreign Relations in New York City. He was also a member of the honorific Cosmos Club in Washington, D. C.

From the late 1940s to the late 1960s, McDermott was much in demand as a consultant to the National Institutes of Health, particularly in the fields of tuberculosis and anti-

microbial therapy. During that time he was appointed to numerous advisory councils, study sections, and special advisory councils within the United States Public Health Service. These appointments included: chairman, the Experimental Therapeutics Study Section, NIH, 1947–1953; chairman, Cancer Chemotherapy Committee, NIH, 1953–1954; member, National Advisory Health Council, NIH, 1955–1959; member, National Advisory Council, Allergy and Infectious Diseases, NIH, 1960–1963; member, Board of Regents, National Library of Medicine, 1964–1968; consultant, Division of Indian Health, 1965–1968.

In the 1960s he chaired several boards and panels concerned with involving American academia and industry in health projects administered under United States foreign aid programs. These included the Development Assistance Panel of the President's Advisory Committee on Science and Technology, the Public Advisory Board in the Department of State, and the U.S. delegation to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, made up of nearly a hundred American scientists representing many fields. He also chaired the Research Advisory Committee of the Agency for International Development.

In the World Health Organization he was a member of the Expert Advisory Panel on Tuberculosis (1958–1973) and the Advisory Committee on Medical Research (1964–1967). He also served on the Pan American Health Organization's Advisory Committee on Medical Research (1962–1970).

In New York City, under Mayors Wagner and Lindsay, he was one of four members of the Board of Health and, with Leona Baumgartner and Colin MacLeod, played a key role in establishing the New York Health Research Council—for a number of years the major financial supporter of the City's various medical schools.

FRIEND AND COLLEAGUE

I became acquainted with Walsh McDermott in 1949–50, when I was appointed to serve, under his chairmanship, on the Experimental Therapeutics Study Section of the National Institutes of Health.

He had a light touch and often injected a bit of humor into the discussions while he kept things moving. I was impressed by the way he made our business go. By the end of the day our work was done, and we were satisfied with it. As I look back on his performance, I am convinced that the reason he guided us so well was that he always did his "homework." He studied carefully every grant request that was to come before us with skill and dedication—accounting, doubtless, for the many invitations he received to serve on committees and advisory boards.

During the last eight years of his life, Walsh McDermott was a trustee of Columbia University. At a memorial service after his death, Columbia's President Sovern said of him: "What Walsh communicated was warmth, good sense, and wonderful humor. He brightened the deliberations of our Board of Trustees even as he made them wiser. Though it strain credulity, even committee meetings could be fun if Walsh was there. . . ."

CREATION OF THE INSTITUTE OF MEDICINE

From time to time throughout the 1960s there had been suggestions that a National Academy of Medicine, related to the National Academy of Sciences, should be formed. McDermott was elected to the NAS in 1967, undoubtedly because of his studies of chemotherapy and his work on the phenomenon of microbial persistence. Soon thereafter he was asked to chair a new planning committee called the

Board on Medicine, whose deliberations have been described by Irving M. London:

"As you know, the president of the National Academy of Sciences, Fred Seitz, appointed a Board on Medicine with Walsh as chairman in the late 1960s. A major function of the Board was to speak to important issues in medicine, to provide informed advice, and to avoid the lobbying posture of organizations such as the American Medical Association.

"An additional important function of the Board was to consider the form that such an organization should develop. There were various currents of thought concerning this organizational form. Some individuals advocated the establishment of a National Academy of Medicine which would be largely honorific, free-standing, and not associated with the National Academy of Sciences. Those who held this position argued that association with the National Academy of Sciences would be too restrictive. Others—particularly Walsh and I—favored close association with the National Academy of Sciences because we felt that the NAS would lend its prestige to our new organization and at the same time would help to exercise a kind of desirable quality control."

McDermott and others argued successfully that what was needed was a prestigious organization affiliated with the NAS but with a diverse membership, to include not only members of the medical profession but also people with expertise in related fields of economics, law, social sciences, and other health care professions such as nursing. This notion was accepted by the new president of the NAS, Philip Handler. The result was a unique organization—the Institute of Medicine of the National Academy of Sciences.

In the two decades of its existence, the Institute of Medicine has served a variety of important functions and come to be regarded as an influential force in American medicine. It has conducted many excellent studies and fulfills a function not appropriate to other societies or organizations in the health care field.

Summarizing Walsh McDermott's contribution to the establishment of the IOM, Irving London wrote:

"In the creation of the Board of Medicine and its evolution [in]to the Institute of Medicine, Walsh was absolutely critical to the success of these developments. He had a deft touch, he was politically sensitive and astute, and he spoke with the authority of one who had achieved scientific distinction, was a recognized authority in his field, and enjoyed the respect of physicians in the practice of medicine. He deserves to be regarded as the Founding Father of the Institute of Medicine."

AWARDS

Walsh McDermott's first major recognition came in 1955 when, with Carl Muschenheim and two other clinicians, he received the Albert Lasker Award for "contribution of the first order to our knowledge of the principles of the treatment and control of tuberculosis. . . ."

In 1963, the National Tuberculosis Association gave him its Trudeau Medal. In 1968, he won the James D. Bruce Memorial Award of the American College of Physicians, and in 1969, received the Woodrow Wilson Award of Princeton University "to a Princeton alumnus in recognition of distinguished achievement in the nation's service. . . ." In 1970, the College of Physicians and Surgeons' Alumni Association gave him its Alumni Gold Medal Award "for distinguished achievement in medicine. . . ." In 1975, the Association of American Physicians gave him the Kober Medal in "full realization of the commanding knowledge in medicine. . . ." In 1979 he received the Blue Cross–Blue Shield Association's National Health Achievement Award "for his monumental contribution to the education of generations of physicians . . . [and] for playing a major role in shaping the health policy in the United States." Princeton and Columbia universities awarded him honorary degrees.

He gave dozens of special lectures in American medical schools and other institutions. Among these may be mentioned the William Allen Pusey Memorial Lecture at the Chicago Institute of Medicine, 1949; the Jenner Lecture at

St. George's Hospital Medical School, London, 1958; the R. E. Dyer Lectureship of the National Institutes of Health, 1959; the J. Burns Amberson Lecture of the National Tuberculosis Association, 1962; the Holme Lecture, University College Hospital, University of London, 1967; the Barnwell Memorial Lecture of the National Tuberculosis Association, 1969; the Heath Clark Lecture, London School of Preventive Medicine and Tropical Hygiene, London, 1971; the William S. Paley Lecture, Cornell Medical College, 1967.

ETHICS, THE MEDICAL PROFESSION, AND MODERN SCIENCE

It seems appropriate to conclude this memoir with something of McDermott's philosophy expressed in his own carefully chosen words. In an introductory chapter to the *Textbook of Medicine*, of which he was co-editor, he explained the expression "statistical compassion:"

"The physician who treats one patient at a time and the physician who deals with a community as a whole both exert compassion, but it is of two quite different sorts. The compassion exercised by the physician who treats individuals takes the form of a cultivated instinct to lend support and comfort to a particular fellow human being. By contrast, the 'group' compassion of the public health or community physician necessarily takes the form of what the writer has previously termed 'statistical compassion.' By this is meant an imaginative compassion for people whom one never gets to see as individuals and, indeed, can know only as data on a graph."

In 1978, in an article entitled "Medicine: The Public Good and One's Own," he wrote further:

"Medicine itself is deeply rooted in a number of sciences, but it is also deeply rooted in the samaritan tradition. The science and the samaritanism are both directed toward the same goal of tempering the harshness of illness and disease. Medicine is thus not a science but a learned profession that attempts to blend affairs of the spirit and the cold objectivity of science

. . . These two functions, the technologic and the samaritan, are separable in the world of analysis but not in the world of real life. . . ."

Accepting the Kober Medal in 1975, McDermott spoke of the explosion of medical science and technology over the preceding fifty years:

"The importance today of these developments that started fifty years ago can hardly be exaggerated. What was substantially a whole new technology was born. Had this new technology, like atomic energy, been ushered in with one big bang on a single day, the implications would have been so obvious that medicine would have been forced to create a comprehensive institutional framework for the new science [like] . . . the Atomic Energy Commission. But the rate of change, although rapid, was just slow enough that it was easy to miss that something quite different was going on from just the logical extension of what had gone on before. The scene was now occupied by a new, powerful, and unruly force which on the one hand could lift our profession into the heights of much greater usefulness, but on the other could destroy it as a profession. . . .

"The piecemeal nature of our institutional approach was greatly furthered by the fact that, with medicine, the coming of the new technology was not followed by a delivery system shaped to fit it. Instead, the new technology was simply engrafted on a centuries-old delivery system—the personal-encounter physician. As a result the profession was stressed almost to the bursting point by the new science—a stress that still continues. This turmoil is not the fault of our science and technology; it results from the relative failure of the institutions for their management."

Regarding the social consequences of modernization, he added:

" . . . Something quite new has been added to the social contract—namely the idea that each of us *as an individual* bears a moral responsibility for the collective acts of our particular society. No longer are we allowed to cling either to [the excuse of] 'orders from above' or to the personal hypocrisies that enabled us to avoid looking at what was morally outrageous. Thanks to communication technology, we cannot escape a virtually daily awareness of the extended consequences of our acts or of our failures to act. There are now very few places to hide."

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